

Document Title: Feasibility Study for the Lower Ley Creek Subsite of the Onondaga Lake Superfund site
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	1.	<p>Restoration language -In general the description of restoration following the implementation of the alternatives is inconsistent and not sufficiently clear to indicate that the alternatives can meet the substantive requirements of 6 NYCRR Part 608. There are three main deficiencies in the language:</p> <ul style="list-style-type: none"> a. Most alternatives describe a change in conditions or are silent about the restoration following removal. b. For all capping options within the riparian corridor or sediment, there should be at least 2 ft of clean material for the restoration of habitat over a cap. This layer should be free of any capping materials and should have characteristics as close as possible to the pre-remediation substrate type. c. A more detailed hydrologic analysis would be needed for design of any chosen alternative. 			<p>The description of restoration following the implementation of the alternatives has been revised to meet the requirements of 6 NYCRR Part 608</p> <ul style="list-style-type: none"> a. Additional information on restoration activities has been added to each alternative. b. Language has been added to all capping alternatives stating that at least 2 ft of clean material will be added for restoration of habitat over a cap. c. A more detailed hydrologic analysis will be required for the design of the chosen alternative because the data provided to the LATA Team are not adequate for a detailed hydrologic analysis. However, the LATA Team has added additional hydrologic analyses in Appendix E making certain assumptions and using the data available.

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	2.	<p>Post-remedial monitoring -The document is generally silent on post-remediation monitoring that would be necessary to ensure restoration of the resource, effectiveness of the remedy, and overall improvement of the contaminant conditions. While monitoring scope and length is likely to vary by alternative, nearly all alternatives should include the following monitoring actions:</p> <ul style="list-style-type: none"> a. Restoration monitoring with the goal of identifying areas where the restoration is not succeeding and directing maintenance and to document recovery of the resource following removals. b. Fish sampling to provide a measure of effectiveness of the remedy in reducing fish tissue concentrations. c. Monitoring to identify any isolation cap disturbance and maintenance of any isolation caps. 			<p>Additional information on post-remediation monitoring has been added to the description of each alternative including:</p> <ul style="list-style-type: none"> a. Identifying areas where restoration is not succeeding, directing maintenance of those areas, and documenting recovery of the resource. b. Collecting fish samples to evaluate the effectiveness of the remedy in reducing fish tissue concentrations. c. Monitoring and maintenance of isolation caps.
	3.	<p>Fish consumption advisories -The description of fish consumption advisories in this document is in need of revision. Overall the following corrections need to be made:</p> <ul style="list-style-type: none"> a. It should be clear that fish consumption advisories, while an institutional control, do not prevent human or ecological exposure to contaminated fish b. The setting and maintenance of fish consumption advisories is determined by NYS Department of Health. 			<p>The description of fish consumption advisories has been revised to indicate that:</p> <ul style="list-style-type: none"> a. Fish consumption advisories do not prevent human or ecological exposure to contaminated fish. b. The setting and maintenance of fish consumption advisories is determined by NYS Department of Health.

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	4.	The soil alternatives discuss the restricted soil cleanup objectives for <i>commercial</i> and industrial use. Where there is ecological use, the ecological soil cleanup objectives should be discussed and used.			Ecological soil cleanup objectives are now discussed and used in the Final FS report. Ecological soil cleanup objectives have been applied for surface soils (i.e., soil between 0-2 feet below ground surface) at the Site.
	5.	The cap design for Alternative Sediment-3: Granular Material Sediment Cap includes an armoring layer above the isolation layer in the upstream section of Lower Ley Creek, but not in the middle section. The determination that no armoring in the middle section is needed is based on an analysis of conditions during average streamflow, not during peak streamflow. (See Appendix E, Section 2.2.) As a result, the cap in the middle section may not be able to withstand erosional forces which would occur when stream velocities exceed average streamflow as would occur during storm/wet weather events. Consistent with EPA design guidance, the cap should be designed so as to be able to withstand erosional forces resulting from the 100-year return interval storm event. The Army Corps of Engineers prepared a 100 year storm hydrograph in June 1971 which estimated peak flow in Ley Creek to be 2000 cfs. Do any of the peak flows noted in Figure 4.2 result from a 100 year storm?			<p>The cap design for Alternative Sediment-3 has been modified as follows:</p> <ul style="list-style-type: none"> • The average stream flow conditions have been replaced with peak streamflow conditions (i.e., the estimated 100 year storm flow of 2000 cubic feet per second [cfs]). • As a result of the above change, armoring layers are now designated for all sections of Lower Ley Creek, including the middle section. <p>The highest peak noted in the stream gauge is 1400 cfs. Based on the US Army Corps of Engineers (USACE) estimation in 1971, this peak does not seem to be the result of a 100 year storm. Therefore, none of the peak flows noted on Figure 4.2 result from a 100 year storm.</p>

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	6.	The cap thickness under Alternative Sediment-3: Granular Material Sediment Cap would consist of 2 ft of a granular (sand) cap in the middle section and a 1.75-ft thick armor stone/habitat layer overlying 1 ft of granular material in the upstream section. The need for the 2 ft of granular cap in the middle section appears to be based on a "safety factor" where an additional ft of sand is included to address the potential for loss of cap material due to erosion as may result from ice scour or flood events. What is the rationale for the placement of a cap with no erosion protection layer in a stream where erosion may occur? The alternative, as currently constructed, is not consistent with guidance on design of sediment caps.			<p>The cap design for Alternative Sediment-3 has been modified as follows:</p> <ul style="list-style-type: none"> • All determinations were established under peak stream flow conditions, which are based on the estimated 100 year storm flow of 2,000 cfs. • As a result of the above change, armoring layers have been designated for all sections of Lower Ley Creek, including the middle section, to account for potential erosion.
	7.	It appears that under Alternative Sediment-3: Granular Material Sediment, a 1-ft thick layer of sand is assumed to provide sufficient chemical isolation of contaminated sediment which would remain below the cap. However, no chemical transport modeling or other quantitative analysis was provided to demonstrate that a 1-ft thick isolation layer is the appropriate thickness to prevent any exceedance of the PRG concentrations at the top of the isolation layer due to chemical upwelling, diffusion, or other transport processes. Please explain.			<p>The existing data are not adequate to perform transport modeling or other quantitative hydrogeologic analyses to definitively determine the appropriate thickness of the isolation layer to prevent any exceedance of the PRG concentrations at the top of the isolation layer due to chemical upwelling, diffusion, or other transport processes. However, the LATA Team has included an additional analysis in Appendix E of the Final FS Report to evaluate the chemical isolation layer thickness required to contain the chemicals in the river sediments. Based on this analysis, the LATA Team believes a 2-ft thick isolation layer will be required in the upstream Section of Lower Ley Creek and a 1.5 ft thick isolation layer will be required for the middle section of the creek.</p> <p>A detailed hydrologic analysis will be required for the design of the chosen alternative after more stream information is collected in the field.</p>

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	8.	The erosion potential of Lower Ley Creek sediment was assessed using an equation from "EM 1110-2-1601, Hydraulic Design of Flood Control Channels, (USACE, 1994)". This equation, however, appears to be intended for riprap design. For example, variable "Cs" is defined as the "stability coefficient for incipient failure (0.30 for angular rock, 0.375 for rounded rock)" and variable "as" is defined as the "unit weight of stone (typical value of 165 pounds [lb]/ft ³).\" Please explain how it is appropriate to use this equation for determining the erosion potential of smaller cohesive particles (<i>e.g.</i> , silts, clays) and discuss assumptions and uncertainties associated with this approach. Please also explain why a hydrodynamic model such as USACE's Hydrologic Engineering Centers River Analysis Section (HEC-RAS), from which local stream velocities and resulting flow-induced shear stresses on the sediment bed are generated for a simulated flow event, and which is often used to evaluate the potential for erosion and deposition for streams such as Lower Ley Creek, was not used for this assessment.			<p>The LATA Team believed that this equation was appropriate for determining the approximate erosion potential of Lower Ley Creek based on the data available. As the currently available stream data is limited to one stream gauge, limited information on stream depth and sediment, and stream widths from GIS data; this equation seemed appropriate.</p> <p>Additional hydrodynamic modeling was not used for this assessment because the data provided to the LATA Team are not adequate to perform modeling. A detailed hydrologic analysis will be required for the design of the chosen alternative after more stream information is collected in the field.</p> <p>To respond to this comment using the existing information, an additional evaluation of erosion potential using Manning's equation and the Hjulstrom Curve has been added to Appendix E.</p>

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	9.	The report states that an engineered bentonite sediment is a proven technology but provides no evidence to support this statement. The document should provide specific examples of where the technology has been implemented and discuss its permanence, reliability and effectiveness. It should also be noted that under Alternative Sediment-4: Engineered Bentonite Sediment Cap, the thickness of the bentonite layer is only 3 inches. Has a bentonite cap of this thickness been successfully constructed? Has it been shown to be effective and to have retained its integrity over time? Has it been shown to be able to withstand erosional forces which would be expected to occur in water bodies similar to Lower Ley Creek? The report also lacks supporting information as to why an erosion protection layer would not be needed with the Engineered Bentonite Sediment Cap.			<p>Under the U.S. Environmental Protection Agency (EPA) Superfund Innovative Technology Evaluation (SITE) Program, the effectiveness of an engineered bentonite cap was evaluated in the Anacostia River in Washington, DC as an innovative contaminated sediment capping technology. In addition, engineered bentonite caps have been successfully deployed as a sediment remediation technology at over 10 sediment remediation project sites and evaluated at bench-scale at several others.</p> <p>A bentonite cap of 3 inches was used during the EPA SITE Program at the Anacostia River Project in Washington, DC. The Anacostia River is similar to Lower Ley Creek in depth and velocity; and sediments exhibited similar contaminants (PCBS, PAHs, metals) and concentrations to those found in Lower Ley Creek. The data generated during the SITE demonstration suggest that the engineered bentonite cap is highly stable. In addition, over the course of the 3-year evaluation, it appears that fine, organic-rich new sediment was deposited in the area, effectively increasing the overall thickness of the sediment cap.</p> <p>As in the Anacostia SITE demonstration capping project, engineered bentonite material has been successfully applied at other project sites with a two to three in application (pre-hydrated) within acceptable tolerances.</p> <p>As stated in the EPA SITE Report, an erosion protection layer is not required for the engineered bentonite cap due to its cohesiveness, physical stability, and impermeability.</p> <p>This information has been added to Section 7.2.4.</p>

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	10.	The FS states that institutional controls, including a ban on dredging in capped/backfilled areas would be part of Sediment Alternatives -3 and -4. As Lower Ley Creek has been dredged in the past to alleviate flooding, the potential that it may need to be dredged in the future to alleviate flooding would be in conflict with the proposed ban on dredging in capped/backfilled areas. The potential for future dredging of the creek for flood control purposes should be factored into the detailed evaluation of sediment alternatives and any proposed institutional controls, particularly those that include capping.			The potential for future dredging of Lower Ley Creek for flood control has been factored into the detailed evaluation of the sediment alternatives in Section 8 of the Final FS and any proposed controls detailed in Section 7 of the Final FS.
	11.	Five-Year Reviews should be added to the descriptions of all soil and sediment alternatives which include containment (isolation capping) as they would allow for contamination to remain in place.			Five-Year Reviews have been added as requested.

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	12.	The tables in Appendix A do not appear to be accurate or complete. For example, while there are numerous references to the NYSDEC sediment screening values in the FS main text, these are not presented in the Appendix A tables. Also, the tables include some citations such as Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands, as ARARs although these should be cited as TBCs consistent with decision documents for other R2 sites/projects. (No TBCs are identified in the tables.) Some references such as the OSWER directives "Developing Remedial Action Objectives and Cleanup Levels for Contaminated Sediment Sites Addressed Under CERCLA" (Oct 10, 2012), "Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites" (Feb 12, 2002), and EPA's "Statement of Procedures on Floodplain Management and Wetlands Protection" are missing altogether from the tables and need to be added. Please review and revise accordingly.			<p>The tables in Appendix A are accurate; however they did not include To Be Considered (TBC) tables. TBC tables have been added to Appendix A, and they include NYSDEC sediment screening values.</p> <p>Additional references have been added to the tables in Appendix A, including:</p> <ul style="list-style-type: none"> • "Developing Remedial Action Objectives and Cleanup Levels for Contaminated Sediment Sites Addressed Under CERCLA" (EPA, 2012) • "Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites" (EPA, 2002) • "Statement of Procedures on Floodplain Management and Wetlands Protection" (EPA, 1979)
	13.	There is no discussion or evaluation of sediment dewatering technologies/facilities in the screening evaluation or description of alternatives. There is also no discussion as to where the dewatering facility would be located. Please explain.			A detailed evaluation of sediment dewatering technologies/facilities will be performed in the remedial design phase. However, the LATA Team has added information in Section 7 on the dewatering technology and proposed a location for the dewatering facility.
Specific Comments					
	14.	The Site also includes the Old Ley Creek Channel, <i>originally a portion of the original Ley Creek prior to its rerouting in the 1970's.</i>		ES-1	The sentence has been modified as requested on Page ES-1 and in Section 2.1.

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	15.	The text states that 0.09 ug/L is the water quality standard for PCB. The text should state that this is when used as a human water source. The text should also add that 1×10^{-6} ug/L is the PCB limit for human fish consumption.	3 rd para. 2.3.1.2	ES-2 2-8	The text on page ES-2 and in Section 2.3.1.2 had been modified to state that 0.09 µg/L is the water quality standard when the water is used as a human water source; and 1×10^{-6} µg/L is the PCB limit for human fish consumption.
	16.	The text should also state that, in addition to metals, PCBs and BNAs being detected above their respective restricted use NYS soil criteria for commercial use; they were also detected above the ecological use values.	4 th para.	ES-2	The sentence now reads, “Metals, PCBs, and BNAs were detected above their respective restricted use NYS soil criteria for commercial use and their respective ecological use values.”
	17.	Areas of ecological use (areas adjacent to the stream) should use the ecological soil cleanup objectives.	1 st and 3 rd para. 5-4	ES-5 5-4	Ecological soil cleanup objectives are now discussed and used in the Final FS Report. Ecological soil cleanup objectives have been applied for surface soils (i.e., soil between 0-2 feet below ground surface) at the Site.
	18.	The Soil-2 remedy appears to be mainly a soil excavation remedy (with limited cover over the natural gas line), and should be renamed to avoid confusion (e.g. Excavation of Soil to Meet Cleanup Goals).		ES-5	The Soil-2 remedy has been renamed as “Excavation of Soil to Meet Cleanup Goals” throughout the report.
	19.	Contrary to the statement here and elsewhere in the document, signage and fencing are not institutional controls.	5 th para.	ES-5	Fencing and signage are now categorized as other types of controls throughout the report.
	20.	The first paragraph states that the land surrounding Lower Ley Creek is mostly used for industrial purposes. The second paragraph indicates that site access is difficult due to thick vegetation indicating that at least some of the site is also used for ecological purposes. Please reconcile.	2.1.2.2	2-3	The following sentence has been added to the end of the first paragraph in Section 2.1.2.2, “However, some ecologically sensitive areas are directly adjacent to Lower Ley Creek.”
	21.	The BNAs, which are the primary human health drivers in the sediment, should be listed.	2.3.1.3	2-9	The LATA Team has added a list of the primary BNA human health drivers.

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	22.	The text discusses the significance of the soil as a source of contamination to Ley Creek. Text should also be added to discuss the significance of the soil as a source of contamination to upland ecological resources.	4.1.2	4-2	The following sentence has been added to this section, "In addition, the soil is currently a significant source of contamination to the riparian corridor and associated upland ecological resources."
	23.	This section is a general description of stream gauge data in Ley Creek. The text should state that if an alternative other than "No Action" is selected, a detailed hydrologic analysis will be necessary in order to determine the effect of the chosen alternative on stream flow, flooding, and dynamics, appropriate materials and bathymetry for restoration, and long-term sustainability.	4.2	4-3	The following paragraph has been added to Section 4.2: "If a sediment remedial alternative other than "No Action" is selected, a detailed hydrologic analysis will be necessary to determine the effect of the chosen alternative on stream flow, flooding, and dynamics, appropriate materials and bathymetry for restoration, and long-term sustainability. This analysis will be performed as part of a remedial design prior to implementation of a remedial action."
	24.	Text should be added to the description of the stream to make a distinction between the current Ley Creek and "Old Ley Creek". The 'stream' characteristics of these two areas are significantly different with the current channel carrying regular and occasionally swift flows while the 'Old Ley Creek' site is functioning as a floodplain wetland. This distinction will be most significant in the hydrologic analysis, the effectiveness of capping, stability of the treatments, and restoration of these areas.	4.2.2	4-3	The following paragraph has been added to the end of Section 4.2.2: "Although, for the purposes of the Feasibility Study, the upstream section of Lower Ley Creek includes the Old Ley Creek Channel; the Old Ley Creek Channel is quite different from Lower Ley Creek in hydrologic characteristics. While Lower Ley Creek is a functioning creek carrying regular and occasionally swift flows, Old Ley Creek has little to no flow and is currently functioning as more of a floodplain wetland."
	25.	Consistent with EPA guidance and directives, MNR should be referred to as "monitored natural recovery", not "monitored natural restoration". (See also Section 6.1.3)	8 th para., 3 rd sentence	5-1	MNR is now referred to as "monitored natural recovery" throughout the report.

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	26.	The statement that only PRGs for soil and sediment have been developed does not appear to be consistent with Appendix B as fish tissue PRGs are presented there. Please clarify.	5.3, 1 st para.	5-4	The following statement has been deleted from Section 5.3: “Therefore, only PRGs for soil and sediment have been developed.”
	27.	This section describes 1 mg/kg PCB as a "restricted use cleanup goal". Use restrictions should not be used to describe sediment in streams as the application of such use restrictions is not relevant. This language is carried throughout the document and should be revised.	5.4.1	5-4	The term “restricted use” has been removed from the Final FS.
	28.	This section describes "most of the Site is used for industrial use". However, the majority of the site is undeveloped riparian corridor so this description does not appear accurate. Please revise.	5.4.2	5-4	Section 5.4.2 has been revised to account for multiple land uses at the site.
	29.	INDENTIFY IDENTIFY AREA AND	5.5	5-4	“INDENTIFY” has been changed to “IDENTIFY” in the heading of Section 5.5.
	30.	a. This section is written to imply that fish consumption advisories are used to "prevent exposure". Please clarify the language. b. This section lists "limitations on recreational use" as potentially applicable to the alternatives. Please clarify the potential limitations that are intended by this language, the alternatives that it applies to, and why the alternatives cannot be designed to allow recreational use of the stream.	6.1.2, 3 rd set of bullets	6-2	a. In the 3 rd set of bullets in Section 6.1.2, the following text has been deleted from the first bullet: “such as restrictions on fish consumption and swimming”. b. After further review, the LATA Team believes that inclusion of the “limitations on recreational use” statement in this section is not relevant to the remedial alternatives. Therefore, this bullet has been deleted.
	31.	• Eat up to four meals per <i>month</i> of brown bullhead.. ..	6.1.2, 4 th set of bullets	6-2	In the 4 th set of bullets in Section 6.1.2, the second bullet has been modified as requested.

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	32.	A statement should be added that excavation can also be performed "in the wet" using shore based earthwork equipment not just "in the dry".	6.1.5.2	6-4	The following sentence has been added in Section 6.1.5.2: "Wet excavation of sediments can also be conducted while it is submerged in the water using conventional earthwork equipment."
	33.	a. The language in these two paragraphs regarding restoration needs to be revised to give a more robust description of the restoration following remediation. Restoration for both the capped and uncapped areas should contain the goal of restoring the area "including trees and shrubs to create a riparian buffer". Seeding and planting should be a component of the restoration throughout the disturbed area. The substrate to be used for the restoration of the resource should be determined during design and not restricted at this point to "6 inches of topsoil".	7.1.2, 3 rd and 4 th para. 7.1.3, 6 th and 7 th para.	7-2 7-3	a. The habitat restoration description for all soil and sediment remedial alternatives (except the "No Action" alternatives) has been revised as requested.
		b. Where the remedial activities require the disturbance of the stream bank, restoration will need to include restoration of the bank with vegetation to the maximum extent possible. In areas where slopes are steep or instability is expected, bioengineering techniques to reduce or eliminate hardening should be used.			b. This Section, with the exception of the No Action Alternative, has been revised as requested.
		c. The text states "Similar soil caps in floodplain areas have been recommended at other Onondaga Lake tributaries". It is not clear how this statement is to be interpreted as the citation does not appear to provide a parallel to site-specific factors at the Ley Creek site. Please revise or remove.			c. This text has been removed from Section 7.1.2, 7.1.3, and 7.1.4.

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	33. (continued)	d. #3 of this section states that the soil cap will "eliminate ... ecological pathways from contact with contaminated soil" The described soil cap (1 ft clean soil) does not eliminate ecological exposure as many species burrow or root deeper than 1 ft. A more accurate statement would be that the cap will "reduce" ecological exposure.			d. We concur. In Sections 7.1.2, 7.1.3, and 7.1.4, item #3 now reads: "It reduces the human health and ecological pathways for contact with contaminated soil."
	34.	Please give examples of suitable trees and shrubs which could be planted on a soil cap.	7.1.3 and 7.1.4	7-3	Examples of suitable trees and shrubs that could be planted on the soil caps has been added to Sections 7.1.2.1, 7.1.3.1, and 7.1.4.1.
	35.	Soil Alternatives 3 and 4. Both alternatives state that access will be controlled by fencing. It is unclear where this fencing will be placed and what effect it might have on wildlife movement.		7-4 and 7-5	Although this information will be refined and finalized during the remedial design phase, the LATA Team has added the following statement to Sections 7.1.2.2, 7.1.3.2, and 7.1.4.2 : "Fencing will be installed only next to potential public access locations (i.e., roads) and should not significantly affect the movement of wildlife."
	36.	This paragraph describes the placement of 2 ft "habitat layer" in disturbed wetland areas. It is unclear why this alternative describes said treatment for the wetlands when alternatives Soil-2 and Soil-3 also proposed disturbance to these habitats but do not describe the restoration needed. The 2 ft should apply throughout habitat types and alternatives.	7.1.4, 2 nd para.	7-5	A 2-ft habitat layer has been added to the descriptions and costs of all soil habitat types and actionable remedial alternatives.
	37.	Replace the words "Shoreline stabilization and waterfront restoration ..." with "Stream bank restoration using bioengineering techniques to avoid hardening ..".	7.2.2, 1 st para.	7-6	The sentence in Section 7.2.2 has been modified as requested.

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	38.	Last sentence. In this paragraph replace "approximately 1 ft" with "at least 1 ft". It is unlikely that 1 ft of backfill material will be sufficient to restore the stream following excavations up to 8 ft. Was only one foot of backfill assumed for all excavations in your cost estimate regardless of depth of excavation, such as the 8-foot deep excavation?	7.2.2	7-6	<p>The statement “approximately 1 ft” has been replaced with “at least 1 ft” in Section 7.2.2.</p> <p>Backfill of 1 ft was assumed for all excavations in our cost estimate regardless of the depth of excavation. Bank stability measures will be conducted as part of the sediment removal alternative. Additional information on bank stability measures has been added to the sediment removal alternative description.</p>
	39.	a. If capping is selected as part of the site remediation, detailed modeling analyses should be conducted during design for cap effectiveness. As noted above, 2 ft of clean habitat material should be placed over the cap materials to provide habitat in the stream. This layer should be designed to provide stable, clean habitat appropriate for the stream and should not be designed as a "sacrificial layer" (as described on pg. 7-9). Repair of the habitat would be necessary should the habitat layer be lost. (See also Comment 6.)	7.2.3	7-7	<p>a. A more detailed hydrologic analysis will be required for the design of the chosen alternative because the data provided to the LATA Team are not adequate for a detailed hydrologic analysis. However, the LATA Team has added additional analyses in Appendix E.</p> <p>The report has been modified to include 2 ft of clean habitat material over the cap materials to provide habitat in the stream.</p> <p>Any reference to the habitat layer as a “sacrificial layer” has been removed from the report.</p> <p>Repair of the habitat layer will be necessary should it be lost or damaged. This information has been added to all sediment alternative descriptions, except the “No Action” alternative.</p>
		b. These sections describe, "ensuring that the current fish advisories for Lower Ley Creek remain in place". A program of monitoring would be necessary to support fish consumption advisories.			<p>b. Descriptions of the fish advisories have been revised to include a monitoring program to support the implementation of the advisories.</p>

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	39. (continued)	c. Sediment-3. First paragraph, 3 rd sentence. Was a 2 foot excavation assumed in the cost estimate even in areas where an armored cap was needed?			<p>c. In areas where an armor cap is needed, an excavation of 2.75 ft was assumed. This assumes a 1 ft thick isolation layer, a 0.75 ft thick armor layer, and a 1 ft thick habitat layer. However, based on comments on the Draft FS report and additional analyses in Appendix E, deeper excavations in the Upstream and Middle Section of Lower Ley Creek are now required:</p> <ul style="list-style-type: none"> For Alternative Sediment-3, the Upstream Section Sediment Cap will consist of a 2 ft thick isolation layer, a 2 ft thick armor layer, and a 2 ft thick habitat later. Therefore, a 6 ft deep excavation will need to be conducted to maintain the bathymetry of the creek in this section. For Alternative Sediment-3, the Middle Section Sediment Cap will consist of a 1.5 ft thick isolation, a 0.375 ft thick armor layer, and a 2 ft thick habitat later. Therefore, a 4 ft deep excavation will need to be conducted to maintain the bathymetry of the creek in this section.

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	39. (continued)	d. 3 rd Paragraph, The description of Alternative Sediment-3 states that the upstream section would include the placement of 1.75 ft thick armor stone/habitat material overlying 1 ft of sand. The description should note that excavation to the depth needed to maintain current bathymetry would occur before cap placement. Also, Table 7.9 indicates that a portion of the upstream section would be excavated to a depth of only 2 ft. Based on Figure 7.8, this portion of the upstream section is that portion of the Old Ley Creek Channel which would be remediated. The text should clarify this and also state that under the alternative, no erosion protection material would be placed there. (See also General Comments regarding the erosion potential of the Old Ley Creek Channel.)			<p>d. The following sentence has been added to Section 7.2.3:</p> <p>“Before the placement of any capping material, excavation of sediment will be conducted to maintain the current bathymetry of Lower Ley Creek.”</p> <p>Old Ley Creek will only be excavated 2 ft deep before the placement of capping material because no erosional protection material is required for the Old Ley Creek Channel. Information on the lack of erosion protection in Old Ley Creek has been added to Section 7.2.3.</p>
	40.	Other than in the Executive Summary section, this is the first instance where an engineered bentonite sediment cap is brought up in the report. Why is this technology not included with the other technologies screened in Section 6? Was a bentonite cap with a thicker layer of bentonite than 3 inches considered?	7.2.4	7-8	An engineered bentonite cap has been included with the other technologies screened in Section 6. A bentonite cap with a thickness greater than 3 inches was considered, but not included as a remedial alternative. Typical applications of engineered bentonite caps are 3 inches thick.
	41.	The reference to the EPA Innovative Technology Evaluation Report (EPA, 2007) does not match the reference in Section 10.	7.2.4, 3 rd para., 5 th sentence	7-8	The reference to the EPA Innovative Technology Evaluation Report has been changed to match the reference in Section 10.

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	42.	It is stated here that, "Natural process[es] that reduce toxicity such as biological degradation of organic compounds would continue to occur beneath the cap following construction, although these processes may be " insignificant and would not be monitored or verified." This statement incorrectly assumes that monitoring of contaminants within or below the cap would not occur after construction. Post construction and long-term monitoring of the sediment cap should be conducted to determine cap effectiveness for as long as the cap is being relied upon to attain PRGs and should be incorporated into all of the capping alternatives. The statement and associated costs for monitoring should be revised accordingly.	8.3.3.4, 1 st para., 3 rd sentence 8.3.4.4, 4 th para., sentence 3	8-20 8-22	<p>The descriptions of the sediment alternatives (with the exception of the No Action alternative) have been revised to include post-construction and long-term monitoring of sediment caps. The referenced sentence in Section 8.3.3.4 and Section 8.3.4.4 has been modified to read:</p> <p>“Natural processes that reduce toxicity, such as biological degradation of organic compounds, would continue to occur beneath the cap following construction and would be monitored as described in Section 7.”</p> <p>The costs for post-construction and long-term monitoring are included in the cost estimates for these alternatives.</p>
	43.	It is stated here that, "Bentonite cap materials are typically not affected by freeze/thaw conditions and are more effective in limiting the migration of contaminants in sediment compared to more permeable materials such as sand." What is the supporting information for this? Specific examples of sites/projects that show that a bentonite cap is not affected by freeze/thaw conditions should be provided. Also, the potential for a bentonite cap to divert and concentrate the flux of contaminants to areas where the cap would not be placed (<i>e.g.</i> , downstream section) should be discussed.	8.3.4.3, 2 nd para., 3 rd sentence	8-22	<p>The basis for the statement that bentonite cap materials are typically not affected by freeze/thaw conditions was obtained from EPA Innovative Technology Evaluation Report (EPA, 2007b). It stated that the engineered bentonite has shown an ability to heal after freeze/thaw cycles. However, upon reconsideration, the LATA Team concurs that this is not adequate evidence to support the statement. Therefore, this statement has been removed from Section 8.3.4.3.</p> <p>A discussion of the potential for a bentonite cap to divert and concentrate the flux of contaminants has been added to Section 8.3.4.3.</p>

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	44.	The soil site boundary should not include Bear Trap Creek. Why are the Crouse-Hinds landfills color-coded and not the Salina Landfill? The brown color on the Crouse-Hinds Northern Landfill also spills over onto part of the Plaza East Property. Please correct.	Figure 2.2		<p>The soil site boundary has been modified to exclude Bear Trap Creek.</p> <p>The extent of the Salina Landfill is now color-coded.</p> <p>The extent of the Cooper Crouse-Hinds Landfill has been revised to exclude the Plaza East Property adjacent to Lower Ley Creek.</p>
	45.	The Northwest soils area should not include BearTrap Creek. The Southern Swale area should not overlap the Crouse-Hinds Landfill.	Figure 2.4		<p>The Northwest Soils boundary has been modified to exclude Beartrap Creek.</p> <p>The Southern Swale Soils boundary has been modified to not overlap the Crouse-Hinds Landfill.</p>
	46.	It would be helpful if sample results which exceed soil/sediment screening criteria were shown in bold or highlighted on these figures.	Figure 2.7 through 2.12		Sample results exceeding soil/sediment screening criteria are now highlighted on Figures 2.7 through 2.12.
	47.	What does the green oval that intersects SB-16 represent?	Figure 2.8		The green oval that intersects SB-16 represents stream deposits. This stratigraphy type has been added to the legend on Figure 2.8.
	48.	These figures do not clearly indicate exceedances of remediation goals. Sampling results are reported for a specified range of contamination and the relevant remediation goal falls in the middle of a reported contamination range. Please adjust these figures so that they can be used to evaluate exceedances of cleanup criteria.	Figures 2.16, 2.17, 2.18, 2.22, 2.23 and 2.24		Figures 2.16, 2.17, 2.18, 2.22, 2.23, and 2.24 have been modified to indicate the exceedances of remediation goals. The ranges of the concentrations in these figures have been modified to match their respective commercial and ecological soil cleanup objectives.

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	49.	How is this figure used in the design of the remedial alternatives or in the development of the cost estimate?	Figure 4.3		Figure 4.3 was not used in the design of remedial alternatives or in the development of the cost estimate in the Draft FS report. Therefore, Figure 4.3 has been removed from the Final FS. A detailed evaluation and discussion of the sediment transport regime is included in Appendix E.
	50.	Crouse-Hinds does not own the land at the edge of the creek. Plaza East is the owner. This area should not be colored brown. Please check the tax maps and correct. The color-coding of the landfill areas is inconsistent i.e. the Town of Salina Landfill is not color coded but the Crouse-Hinds Landfill is.	Figure 7.1		The LATA Team has checked the tax maps, and the extent of the Cooper Crouse-Hinds Landfill has been revised to exclude the Plaza East Property adjacent to Lower Ley Creek. The extent of the Salina Landfill is now color-coded.
	51.	See comment on Figure 7.1.	Figures 7.2, 7.3, and 7.4		The extent of the Cooper Crouse-Hinds Landfill has been revised to exclude the Plaza East Property adjacent to Lower Ley Creek. The extent of the Salina Landfill is now color-coded.
	52.	a. It appears that the depiction of the "Landfill Buffer Zone" is incorrect. This area is wetland. The Crouse-Hinds ROD in this area calls for remediation of the wetland on Crouse-Hinds property, and then a buffer zone of clean soil between the wetland and landfill waste (please see Crouse-Hinds ROD figures).	Figures 7.1-7.4		a. The Crouse-Hinds ROD figures were reviewed and the extent of the Cooper Crouse-Hinds Landfill has been revised to exclude the Plaza East Property adjacent to Lower Ley Creek. The depiction of the "Landfill Buffer Zone" has been deleted.

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	52. (continued)	b. The figures also depict a limited 2-foot removal (Figure 7.1) or cap (Figure 7.4) in the "Landfill Buffer Zone". Additional removal or capping, beyond that depicted appears to be supported by the RI data (please see the Crouse-Hinds ROD for the remedy in the other portion of this wetland).			b. In our review of the Crouse Hinds RI data, only one sample (SED-3) was collected in the limited 2-ft removal area shown on Figure 7.1. This sample was collected at a depth of 0-0.5 ft and contained concentrations exceeding cleanup goals. No samples were collected at deeper depths or in any other locations in this area.
	53.	This figure indicates three main polygons of soil capping which are nearly all in the 100 year floodplain, yet the polygons are not shaded as per the legend for soil cap in the floodplain, please clarify the figure.	Figure 7.3		Figure 7.3 has been modified to exhibit that nearly all the areas of soil capping are in the floodplain. In addition, this figure has been modified due to other comments.
	54.	This figure does not agree with Figure 4.3. This needs to be explained.	Figure 7.8		Figure 4.3 has been removed from the Final FS. A detailed evaluation and discussion of the sediment transport regime is included in Appendix E.
	55.	OTAL TOTAL AREAL EXTENT OF SEDIMENTS ABOVE ...	Table 5.6 – bottom of page		“OTAL” has been changed to “TOTAL” at the bottom of Table 5.6.
	56.	Dry excavation is not retained due to implementability issues, yet it is mentioned on page 7-7 as being used in shallow areas of the creek. Please correct this inconsistency.	Table 6.1, Page 3 of 4		Dry excavation is now retained in Table 6.1.
	57.	Add habitat layer to the descriptions, as necessary.	Table 7.7		A habitat layer has been added to the descriptions in Table 7.7.
	58.	Alternatives 3 and 4 also have short-term effectiveness issues similar to Alternative 2 since excavation is required prior to capping.	Table 8.2	2	Additional short-term effectiveness issues have been added to Alternatives 3 and 4 in Table 8.2.

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	59.	These tables include an onsite TSCA disposal cell yet the size and location of the cell is not indicated in the description of soil and sediment alternatives. Given that the cost of an onsite TSCA cell is significantly greater than offsite disposal of TSCA waste, and that there would likely be community acceptance concerns associated with the siting of such a facility, offsite disposal of all TSCA materials should be assumed in every soil and sediment alternative.	Appendix C, Tables C-1 and C-2		Tables C-1 and C-2 have been modified to assume off-site disposal of all TSCA materials for every soil and sediment alternative, even the on-site disposal alternatives.
	60.	Alternatives Soil-2 and Sediment-2 call for complete removal of contaminated soil and sediment yet they include costs for a Five-Year Review. Why? In this instance, post-remedial monitoring of the restoration is not the same as a Five-Year Review.	Appendix C, Tables C-1 through C-4		The costs for a Five-Year Review have been removed from Alternatives Soil-2 and Sediment-2.
	61.	Why do these tables show a 3-inch sand layer with the 3-inch bentonite cap under Alternative Sediment-4? Isn't the sand component 12 inches under this alternative?	Appendix C, Tables C-2 and C-4		<p>The engineered bentonite cap alternative assumes 15 inches of sand on top of the bentonite cap. The cost of the additional 12 inches of sand is included as part of the "Backfill Sediments/Habitat Layer" in the cost spreadsheets. The text has been modified to make this clearer.</p> <p>However, based on comments on the Draft FS report, the habitat layer thickness above the engineered bentonite cap has been increased to 24 inches (2 ft) in the Final FS Report.</p>
	62.	Why are costs for MNR sampling and reporting included for the sediment alternatives? MNR is not included in the description of the alternatives.	Appendix C, Tables C-2 and C-4		MNR has been added to the description of the sediment alternatives, with the exception of the No Action alternative. Monitoring is required to evaluate the effectiveness of the habitat restoration efforts.

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	63.	The year for the reference, EPA <i>Contaminated Sediment Remediation Guidance for Hazardous Waste Site</i> , is 2005, not 2007.	Appendix E, Section 5.0	E-4-3 and E-5-5	The date for this reference has been changed to 2005.
	64.	According to the 1970's construction documents, the design width in this section is 70 feet. How were the 100 foot and 50 foot widths derived?	Appendix E, 2.2.1	2-2	The average widths of the stream sections were estimates based on GIS maps. Based on this new information, the LATA Team has modified the average width of the upstream section of Lower Ley Creek to 70 ft in the report.
	65.	According to the 1970's construction documents, the design width is 80 feet near 7 th North Street and 50 feet near NYS Route 81.	Appendix E, 2.2.2	2-3	The average widths of the stream sections were estimates based on GIS maps. Although the design width is 80 feet near 7 th North Street, the middle section of Lower Ley Creek significantly widens south of the 7 th North Street Bridge. Therefore, the LATA Team believes that an average width of 100 ft is a reasonable estimate for the middle section of Lower Ley Creek Based on this new information, the LATA Team has modified the average width of the downstream section of Lower Ley Creek to 50 ft in the report.
	66.	This section states that a "2-ft granular sand cap" is a similar design proposed for the Grasse River Site, referencing a 2010 document. This description is not accurate for the cap indicated in the current ROD (April 2013). Please remove the reference or update accordingly.	Appendix E, 3.0	E-3-1	This reference has been removed.

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	67.	The sediment alternatives need to include and carry through a “Monitored Natural Recovery” alternative (i.e. no action plus monitoring) in addition to the “No Action” (i.e. no action and no monitoring) alternative. You already have this alternative as “retained” in the first round of screening but it was not carried through to the next screening round (see Table 6.1, page 1 of 4). Please add it to the sediment alternatives only. It does not need to be added to the soil alternatives.			A Monitored Natural Recovery alternative has been added to the sediment alternatives.